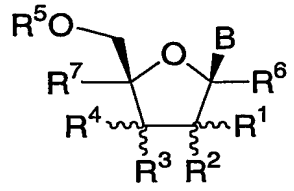
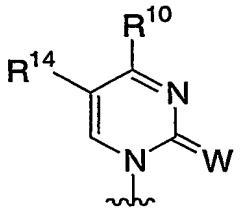
WHAT IS CLAIMED IS:

1. A compound of structural formula I:

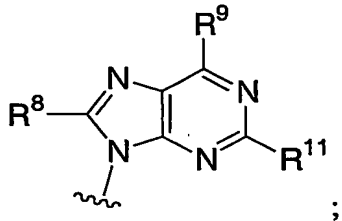


(I)

or a pharmaceutically acceptable salt thereof;
wherein B is



or



;

W is O or S;

$R^1$ is fluoromethyl, difluoromethyl, or trifluoromethyl;

$R^2$ is hydrogen, fluorine, amino, hydroxy, mercapto, $C_{1-4}$ alkoxy, $C_{1-8}$ alkylcarbonyloxy, or $C_{1-4}$ alkyl;

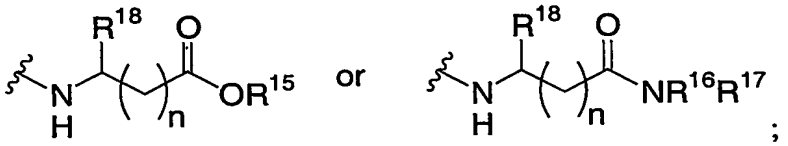
$R^3$ and $R^4$ are each independently selected from the group consisting of hydrogen, cyano, azido, halogen, hydroxy, mercapto, amino, $C_{1-4}$ alkoxy, $C_{1-8}$ alkylcarbonyloxy, $C_{2-4}$ alkenyl, $C_{2-4}$ alkynyl, and $C_{1-4}$ alkyl, wherein alkyl is unsubstituted or substituted with hydroxy, amino, $C_{1-4}$ alkoxy, $C_{1-4}$ alkylthio, or one to three fluorine atoms;

$R^5$ is hydrogen, $C_{1-10}$ alkylcarbonyl, $P_3O_9H_4$, $P_2O_6H_3$, or $P(O)R^{12}R^{13}$;

$R^6$ and $R^7$ are each independently hydrogen, methyl, hydroxymethyl, or fluoromethyl;

$R^8$ is hydrogen, $C_{1-4}$ alkyl, $C_{2-4}$ alkynyl, halogen, cyano, carboxy, $C_{1-4}$ alkyloxycarbonyl, azido, amino, $C_{1-4}$ alkylamino, di($C_{1-4}$ alkyl)amino, hydroxy, $C_{1-6}$ alkoxy, $C_{1-6}$ alkylthio, $C_{1-6}$ alkylsulfonyl, or ($C_{1-4}$ alkyl)$_{0-2}$ aminomethyl;

$R^9$ and $R^{10}$ are each independently hydrogen, hydroxy, mercapto, halogen, $C_{1-4}$ alkoxy, $C_{1-4}$ alkylthio, $C_{1-8}$ alkylcarbonyloxy, $C_{3-6}$ cycloalkylcarbonyloxy, $C_{1-8}$ alkyloxycarbonyloxy, $C_{3-6}$ cycloalkyloxycarbonyloxy, $-OCH_2CH_2SC(=O)C_{1-4}$ alkyl, $-OCH_2O(C=O)C_{1-4}$ alkyl, $-OCH(C_{1-4}$ alkyl$)O(C=O)C_{1-4}$ alkyl, amino, $C_{1-4}$ alkylamino, di($C_{1-4}$ alkyl)amino, $C_{3-6}$ cycloalkylamino, di($C_{3-6}$ cycloalkyl)amino, or an amino acyl residue having structural formula



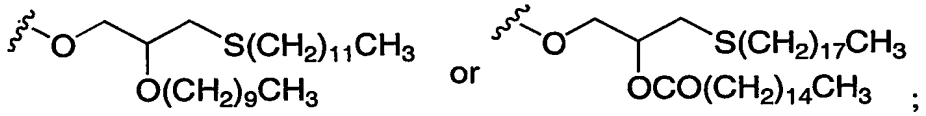
;

n is 0, 1, or 2;

$R^{11}$ is hydrogen, hydroxy, halogen, $C_{1-4}$ alkoxy, amino, $C_{1-4}$ alkylamino, di($C_{1-4}$ alkyl)amino, $C_{3-6}$ cycloalkylamino, or di($C_{3-6}$ cycloalkylamino);

$R^{15}$, $R^{16}$, and $R^{17}$ are each independently hydrogen or $C_{1-6}$ alkyl;

$R^{12}$ and $R^{13}$ are each independently hydroxy, $-OCH_2CH_2SC(=O)C_{1-4}$ alkyl, $-OCH_2O(C=O)OC_{1-4}$ alkyl, $-NHCHMeCO_2Me$, $-OCH(C_{1-4}$ alkyl$)O(C=O)C_{1-4}$ alkyl,

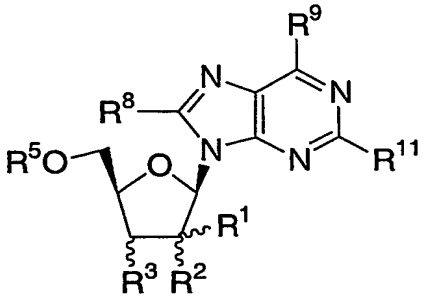


;

$R^{14}$ is hydrogen, $C_{1-6}$ alkyl, $C_{2-6}$ alkenyl, $C_{2-6}$ alkynyl, $C_{1-4}$ alkylamino, $CF_3$, or halogen; and

$R^{18}$ is hydrogen, $C_{1-4}$ alkyl, or phenyl $C_{0-2}$ alkyl.

2. The compound of Claim 1 of structural formula II:



(II)

or a pharmaceutically acceptable salt thereof;

wherein

$R^1$ is fluoromethyl or difluoromethyl;

$R^2$ is hydroxy, fluoro, or $C_{1-3}$ alkoxy;

$R^3$ is hydrogen, halogen, hydroxy, amino, or $C_{1-3}$ alkoxy;

$R^5$ is hydrogen, $P_3O_9H_4$, $P_2O_6H_3$, or $PO_3H_2$;

$R^8$ is hydrogen, amino, or $C_{1-4}$ alkylamino; and

$R^9$ and $R^{10}$ are each independently hydrogen, halogen, hydroxy, amino, $C_{1-4}$ alkylamino, di($C_{1-4}$ alkyl)amino, or $C_{3-6}$ cycloalkylamino.

3. The compound of Claim 2 wherein

$R^1$ is fluoromethyl or difluoromethyl;

$R^2$ is hydroxy, fluoro, or methoxy;

$R^3$ is hydrogen, fluoro, hydroxy, amino, or methoxy;

$R^5$ is hydrogen or $P_3O_9H_4$;

$R^8$ is hydrogen or amino; and

$R^9$ and $R^{10}$ are each independently hydrogen, fluoro, hydroxy, or amino.

4. The compound of Claim 1 selected from the group consisting of:

6-amino-9-(2-*C*-fluoromethyl-β-D-ribofuranosyl)purine;

6-amino-9-(2-*C*-fluoromethyl-β-D-arabinofuranosyl)purine;

2-amino-9-(2-*C*-fluoromethyl-β-D-ribofuranosyl)-3,9-dihydropurin-6-one;

2-amino-9-(2-*C*-fluoromethyl-β-D-arabinofuranosyl)-3,9-dihydropurin-6-one;

2-amino-9-(2-*C*-fluoromethyl-β-D-ribofuranosyl)-3,9-dihydropurin-6-thione;

2,6-diamino-9-(2-*C*-fluoromethyl-β-D-ribofuranosyl)purine;

9-(2-*C*-fluoromethyl-β-D-ribofuranosyl)-6-methylaminopurine;
2'-*C*-(fluoromethyl)cytidine;
2'-*C*-(fluoromethyl)-5-methylcytidine;
2'-*C*-(fluoromethyl)uridine;
2'-*C*-(fluoromethyl)-5-methyluridine;
and the corresponding 5'-triphosphates;
or a pharmaceutically acceptable salt thereof.

5. The compound of Claim 4 which is
2-amino-9-(2-*C*-fluoromethyl-β-D-ribofuranosyl)-3,9-dihydropurin-6-one;
or a pharmaceutically acceptable salt thereof.

6. The compound of Claim 4 which is 6-amino-9-(2-*C*-fluoromethyl-β-D-ribofuranosyl)purine;
or a pharmaceutically acceptable salt thereof.

7. A pharmaceutical composition comprising a compound of Claim 1 and a pharmaceutically acceptable carrier.

8. A method of treating RNA-dependent RNA virus infection comprising administering to a mammal in need of such treatment a therapeutically effective amount of a compound according to Claim 1.

9. The method of Claim 8 wherein said RNA-dependent RNA virus infection is hepatitis C virus (HCV) infection.

10. The method of Claim 9 in combination with a therapeutically effective amount of another agent active against HCV.

11. The method of Claim 10 wherein said agent active against HCV is a 2'-*C*-Me-ribonucleoside; ribavirin; levovirin; thymosin alpha-1; interferon-β; an inhibitor of NS3 serine protease; an inhibitor of inosine monophosphate dehydrogenase; interferon-α or pegylated interferon-α, alone or in combination with ribavirin or levovirin.

12. The method of Claim 11 wherein said agent active against HCV is interferon-α or pegylated interferon-α, alone or in combination with ribavirin.

13. Use of a compound of Claim 1 for treatment of RNA-dependent RNA virus infection in a mammal.

14. The use of Claim 13 wherein said RNA-dependent RNA virus infection is HCV infection.

15. Use of a compound of Claim 1 in the manufacture of a medicament for treatment of RNA-dependent RNA virus infection in a mammal.

16. The use of Claim 15 wherein said RNA-dependent RNA virus infection is HCV infection.